In the Claims:

Please amend claims 1 and 4, and please cancel claim 3, as indicated below.

1. (Currently amended) A serial communication controller for transmitting and receiving a serial data stream including multiple serial data channels having portions which alternate in time with respect to each other, comprising:

> a plurality of functional units configured to operate in series according to a serial communication protocol, wherein each functional unit is configured to perform a different specific function of said serial communication protocol, and wherein the plurality of functional units operates in time sequence upon the portions of the multiple serial data channels; ~~and~~

> wherein the plurality of functional units is configured to perform said serial communication protocol on the multiple serial data channels; and

> wherein each functional unit is a state machine having a set of unique operating states, and wherein each functional unit comprises a set of memory elements, and wherein state information stored within the set of memory elements of a given functional unit determines the one of the unique operating states in which the functional unit is operating.

2. (Original) The serial communication controller as recited in claim 1, wherein the serial data stream includes digital data of only one of the multiple serial data channels at any given time, and wherein each of the multiple serial data channels is assigned a periodically recurring time segment and is active during its assigned time segment, and wherein the plurality of functional units operates upon the active serial data channel.

3. (Canceled)

4. (Currently amended) The serial communication controller as recited in claim [[3]]1, further comprising a memory unit operably coupled to each of the plurality of functional units, wherein the memory unit includes a separate portion allocated to each of the multiple serial data channels for storing the state information of the functional units.

5. (Original) The serial communication controller as recited in claim 4, further comprising a microcontroller coupled to each of the plurality of functional units and to the memory unit, wherein the microcontroller transfers state information between the functional units and the memory unit such that the plurality of functional units operates alternately upon the portions of the multiple serial data channels.

6. (Previously presented) A serial communication controller for transmitting and receiving a serial data stream including alternating portions of multiple serial data channels, comprising:

a plurality of functional units each configured to perform a specific function of a serial communication protocol, wherein each functional unit is a state machine having a set of unique operating states, and wherein each functional unit comprises a programmable state register, and wherein state information stored within the state register of a given functional unit determines the one of the unique operating states in which the functional unit is operating;

a memory unit including a separate portion allocated to each of the multiple serial data channels for storing the state information of the functional units; and

a microcontroller coupled to each of the plurality of functional units and to the memory unit, wherein the microcontroller is configured to transfer state information between the plurality of functional units and the memory unit such that the plurality of functional units operates alternately upon the portions of the multiple serial data channels;

wherein different state information is transferred for each serial data channel depending on which serial data channel's portion is being operated on by the plurality of functional units.

7. (Original) The serial communication controller as recited in claim 6, further comprising a time slot assigner group coupled to the microcontroller, wherein the time slot assigner group includes clocking circuitry and keeps track of which of the multiple serial data channels is active.

8. (Original) The serial communication controller as recited in claim 7, wherein the time slot assigner group produces an output signal indicating which of the multiple serial data channels is active, wherein the microcontroller receives the output signal and performs the state information transfers in response to the output signal.

9. (Original) The serial communication controller as recited in claim 7, wherein the time slot assigner group includes an active time slot register, and wherein the contents of the active time slot register indicate which of the multiple serial data channels is active, and wherein the microcontroller reads the active time slot register and performs the state information transfers dependent upon the contents of the active time slot register.

10. (Original) The serial communication controller as recited in claim 7, wherein the plurality of functional units, the memory unit, the microcontroller, and the time slot assigner group are formed upon a single monolithic semiconductor substrate.

11. (Previously presented) A method for transmitting and receiving a serial data stream including alternating portions of multiple serial data channels, comprising:

providing a plurality of functional units each configured to perform a specific function of a serial communication protocol upon the portions of the

multiple serial data channels, wherein each functional unit is a state machine having a set of unique operating states, and wherein state information stored within a given functional unit determines the one of the unique operating states in which the functional unit is operating; and

transferring state information between the plurality of functional units and a memory unit such that the plurality of functional units operates alternately upon the portions of the multiple serial data channels;

wherein different state information is transferred for each serial data channel depending on which serial data channel's portion is being operated on by the plurality of functional units.

12. (Original) The method as recited in claim 11, wherein the transferring comprises:

determining a change in the active serial data channel from a first serial data channel to a second data channel; and

responding to the change in the active serial data channel by:

retrieving the state information within each functional unit;

storing the retrieved state information within in a portion of the memory unit allocated to the first data channel;

retrieving state information from a portion of the memory unit allocated to the second data channel; and

storing the retrieved state information within each functional unit.

13. (Original) The method as recited in claim 12, wherein the alternating portions of the multiple serial data channels are periodically recurring, and wherein the determining comprises synchronizing clocking circuitry to the periodically recurring portions of the multiple serial data channels.

14. (Previously presented) A serial communication system, comprising:

an interface unit adapted for coupling to a transmission medium, wherein the interface unit is configured to receive a receive serial data stream including alternating portions of multiple serial data channels from the transmission medium and to provide the receive serial data stream;

a timing recovery unit coupled to receive the receive serial data stream from the interface unit, wherein the timing recovery unit is configured to produce a clock signal derived from the receive serial data stream and to provide the receive serial data stream; and

a serial communication controller coupled to receive the clock signal and the receive serial data stream, wherein the serial communication controller comprises a plurality of functional units configured to operate in series according to a serial communication protocol, and wherein each functional unit is configured to perform a different specific function of said serial communication protocol, and wherein the plurality of functional units operates alternately upon the portions of the multiple serial data channels of the receive serial data stream to perform said serial communication protocol on the multiple serial data channels.

15. (Original) The serial communication system as recited in claim 14, wherein the serial communication controller is further configured to produce a transmit serial data stream including alternating portions of multiple serial data channels, and wherein the interface unit is coupled to receive the transmit serial data stream and further configure to

drive the transmit serial data stream upon the transmission medium.

16. (Original) The serial communication system as recited in claim 14, wherein the serial communication controller is adapted for coupling to a host processor.